

Precious metal recovery: Photographic silver

The following is provided to reiterate the requirements for persons who manage hazardous wastes reclaimed for precious metals, which includes spent photographic fixer solutions and silver recovery cartridges. Section 9 VAC 20-60-266 of the Virginia Hazardous Waste Management Regulations (VHWMR) applies to recyclable materials that are reclaimed to recover economically significant amounts of precious metals (including silver). Spent materials determined to be listed or characteristic hazardous wastes from which precious metals are subsequently recovered are subject to the requirements of this section. Persons who generate, transport, or store recyclable materials are subject to notification requirements (VHWMR 20-60-262.12) and manifest requirements (VHWMR 20-60-262.20). In addition, VHWMR 20-60-265.71 and 265.72 are applicable to those who store these materials. Persons who store recyclable materials are also required to maintain additional records to document that the materials are not being accumulated speculatively (VHWMR 20-60-261.1(c) definition - "speculatively accumulated material").

Persons who transport these materials are subject to notification requirements (as above), manifest requirements (as above, and VHWMR 20-60-263.21), and transporter permit requirements (VHWMR 20-60-450).

Generators of these wastes are subject to notification and manifest requirements, based on their generator classification type (Conditionally Exempt, 100-1000 kg/mo, or full generator). Conditionally Exempt Small Quantity Generators (generate less than 100 kg/mo of hazardous waste) of these recyclable wastes are not required to have an EPA ID number or use the manifest and may transport their own waste to a recycler. The 100-1000 kg/mo Small Generators are also excluded from the manifest requirement if their wastes are reclaimed pursuant to a contract recycling agreement. However, they must obtain an EPA ID number by filing a Notification of Hazardous Waste Activity and use a permitted transporter. Please note that the contract recycling agreement must list the EPA ID number of the recycling facility and the generator, if the generator is required to have a number. Fully regulated generators (>1000 kg/mo total quantity of hazardous waste) must have an EPA ID number, use the Uniform Hazardous Waste Manifest, and ship the waste through a permitted transporter to a recycling facility. Generators are subject to the accumulation time limits for these materials based on their generator status (180 days for SQG, 90 days for Generators). They may accumulate precious metal reclaim wastes up to 1 year if they comply with speculative accumulation record keeping requirements.

Please note, as a general rule-of-thumb 1 gallon of aqueous solution is presumed to weigh approximately 8.5 pounds for purposes of calculating the quantity of regulated waste generated. Also, a generator must include all hazardous wastes generated at the facility in the quantity determination, not just the specific waste type discussed above (for example, if a facility generated 950 kg/mo total of all other hazardous wastes and 51 kg/mo of regulated photoprocessing waste to be reclaimed for precious metals, then they are full generators and must use a manifest when shipping the photoprocessing waste to a reclaim facility).

Facilities receiving precious metal reclaim wastes of this type are required to maintain manifests, make an annual report, keep an operating record, and maintain speculative accumulation records in accordance with VHWMR 20-60-264.70. Facilities that store these materials, or receive these materials from off-site for storage, are not required to obtain a permit to operate as a RCRA Part B hazardous waste management facility for that activity, provided that they comply with the provisions noted above, or unless the materials are determined to be accumulated speculatively. Please be aware, facilities receiving waste regulated under this provision that has not been accompanied by a manifest (if required by generator category) are required to file a manifest exception report.

Based on information observed by Department inspectors, including analytical data maintained by generators operating silver recovery systems, steel wool type (metallic exchange) cartridges usually exhibit a toxicity characteristic for silver and are regulated as a D011 hazardous waste. The ion-exchange resin type cartridges may or may not exhibit a characteristic depending on conditions of use and how well

they are rinsed. The electro-winning/electro-deposition type units usually do not generate silver recovery material which exhibits a characteristic and the deposited silver may be managed as a scrap metal for reclaim. Spent fixer solution itself, especially from black and white film and prints or x-ray processing, may be presumed to exhibit a hazardous waste characteristic for silver. Spent fixer from certain color processing methods may or may not fail, and generators are advised to test by TCLP.

Most photo processors reclaim silver from spent fixer solutions by passing it through the same recovery system that they use to recover silver from their process rinsewater. Reclamation of the spent fixer usually results in spent material reclaim residues (e.g., the steel wool reclaim filters) that may continue to exhibit a characteristic. Virginia holds that the spent fixer is a spent material, not a wastewater like the process rinsewater. However, whether or not the spent material [fixer solution] is accumulated [i.e., prior to reclamation], the status of the silver recovery unit remains unchanged. The silver recovery unit is a characteristic sludge being reclaimed and therefore is not a solid waste and therefore not a hazardous waste." RO11814

EPA further clarifies that the spent fixer solution is a "spent material" (and not a by-product or a WWT sludge). Spent materials that exhibit a characteristic of HW are regulated as a HW when sent for reclamation per Table 1 of 40 CFR 261.2. However, if the reclamation is for precious metals recovery then the generator would be subject to the reduced requirements for precious metal recycling. (These requirements would apply to the spent fixer solution and not the silver recovery unit.) On the other hand, characteristic sludges are not a SW (and thus not a HW) when reclaimed per Table 1 of 40 CFR 261.2 and subtitle C requirements do not apply. RO11814

Please note that this is an instructional summary for compliance assistance purposes. Generators are encouraged to review the complete hazardous waste regulations and to check with appropriate DEQ staff if they have any questions about regulation applicability to their waste streams.

References: RO11541, RO11814, RO11914 and RO13758

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